Tinghui Zhu

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Education

Fudan University 2022/09 – 2025/06
Master of Science in Computer Science Shanghai, China
- Advisor: Yanghua Xiao

Fudan University 2018/09 – 2022/06
Bachelor of Science in Computer Science Shanghai, China
- Undergraduate Researcher @ Knowledge Works Research Laboratory

Research Papers

Under Review

1. *Towards Visual Taxonomy Expansion*
   Tinghui Zhu, Jingping Liu, Haiyun Jiang, Yanghua Xiao, Zongyu Wang, Rui Xie, Yunsen Xian

Publications

1. *End-to-end Entity Linking with Hierarchical Reinforcement Learning* [AAAI 23]
   Lihan Chen, **Tinghui Zhu**, Jingping Liu, Jiaqing Liang, Yanghua Xiao

Research Experience

Multi-modal Hypernymy Detection 2022/06 – 2022/12
- Enhanced the semantic understanding of given terms by incorporating term images. Facilitated the differentiation between prototypical hypernyms and actual hypernyms and improved the comprehension of unseen terms.
- Implemented prototypical contrastive clustering to generate high-level visual semantics for hypernyms that lack visual features. Mitigated the common issue of collapsing in deep clustering algorithms. Produced distinctive visual clusters that represent unique semantics distinct from their textual counterparts.
- Designed heurisitc modality fusion methods from observations of preliminary experiments.
- Applied on Meituan platform and designed an automatic hypernymy detection workflow that consistently acquire hypernymy pairs from query-click logs.

Clue Understanding 2022/01 – 2022/05
- Developed a comprehensive dataset for clue understanding in crossword puzzles, with the objective of assessing proficiency in understanding ambiguous and concise natural language, as well as evaluating knowledge acquisition and reasoning capabilities.
- Partitioned the dataset based on the semantic similarity of clues, prioritizing the comprehension of clues.
- Evaluated various baseline models, including text retrieval, KNN, OpenQA methods , and generative language models such as T5, on the dataset. The outcomes revealed the limitations of existing natural language processing techniques in effectively solving our proposed dataset.

Hyperymy Detection as NER 2022/10 – 2023/03
- Adapted a NER method for the purpose of hypernymy detection, treating the extraction of hypernymy pairs as a tagging task. Employed the Global Pointer framework to extract hypernymy pairs from query-click logs.
- Devised a unified training framework that initially extracted hypernyms and subsequently utilized them as prompts for extracting hyponyms, enabling the extraction of both hypernym and hyponym pairs from the given data.

Projects

ChineseBlip2 2023/04 – Now
- Translated multiple image-text datasets using ChatGPT and applied diffusion models to generate high-quality image-text pairs, enhancing the generalizability of existing Chinese datasets.
- Pretrained Blip2 based on the instruction-finetuned BloomZ+LoRA. During stage 1, aligned image-text pairs on translated and existing Chinese datasets. During stage 2, constructed a instruction finetuning dataset and designed new input formats for instruction-finetune LLM.